Everglades

National Park Service
U.S. Department of the Interior

Everglades National Park

Once an Exotic, Always an Exotic!

European settlers brought hundreds of plants to North America from their home lands for food, medicinal, ornamental, and other purposes. Introductions of exotic plants continue today and are increasing due to an exploding human population, increased international travel, and the intentional and accidental movement of large numbers of species between continents as a result of expanded international trade. Many introduced plants have become *naturalized* across the continent and some are replacing North American native plant species. These naturalized plants--however a part of our current landscapes and ecosystems--are nontheless exotic, since they were moved here by people rather than by natural means. Because the historical distributions of some species are unknown or unclear, research continues to attempt to unravel the tangle of human and natural influences responsible for their current ranges.

Growth Habit - Invasiveness. The most important aspect of an alien plant is how it responds to a new environment. An ***invasive*** species is one that displays rapid growth and spread, allowing it to establish over large areas. Free from the vast and complex array of natural controls present in their native lands, including herbivores, parasites, and diseases, exotic plants may experience rapid and unrestricted growth in new environments. Invasiveness is enhanced by characteristics like fast growth, abundant seed production, high seed germination rate, long-lived seeds, and rapid maturation to a sexually reproductive (seed-producing) stage. Invasive plants reproduce rapidly, either vegetatively or by seed. Their phenomenal growth allows them to overwhelm and displace existing vegetation and form dense one-species stands.

Not all exotic species are considered harmful. For example, a small number of non-invasive alien plants (e.g., corn, wheat, oats) form the basis of our agricultural industry and pose little to no threat to our natural ecosystems. However, each alien plant is one less native host plant for our native insects, vertebrates, and other organisms that are dependent upon them.

Impacts of Invasive Alien Plants

Invasive, non-native organisms are one of the greatest threats to the natural ecosystems of the U.S. and are destroying America's natural history and identity. These unwelcome plants, insects, and other organisms are disrupting the ecology of natural ecosystems, displacing native plant and animal species, and degrading our nation's unique and diverse biological resources. Aggressive invaders reduce the amount of light, water, nutrients, and space available to native species, alter hydrological patterns, soil chemistry, moisture-holding capacity, and erodibility, and change fire regimes. Some exotics are capable of hybridizing with native plant relatives, resulting in unnatural changes to a plant's genetic makeup. Still others contain toxins that may be lethal to certain animals.

Exotic organisms have been referred to as biological pollution. In some cases, exotic plant invaders are driving our rarest species closer to extinction. According to the U.S. Fish and Wildlife Service, an estimated 42% of the nation's endangered and threatened species have declined as a result of encroaching exotic plants and animals. And management of these species is expensive. Each year, the National Park Service and the Fish and Wildlife Service spend an estimated 12 million dollars on controlling exotic plants. Invasive plants also cause billions of dollars in economic losses and expenditures each year for agriculture, forestry, range lands and roadways management.

Impacts to Native Fauna

Our native fauna, including insects, birds, mammals, reptiles, fish and other animals, is dependent on native plants for food and shelter. While some animals have a varied diet and can feed on a wide number of plant species, others are highly specialized and may be restricted to feeding on several or a single plant species. The term *host plant* is generally used to describe a plant species that is required food for an insect or other animal. As exotic plants replace our native flora, fewer host plants are available to provide the necessary nutrition for native wildlife.

Approximately 4,000 species of exotic plants and 500 exotic animals have established populations in the United States. Nearly 700 are known to cause severe harm to agriculture. Over 1,000 exotic plant species have been identified as a threat to our native flora and fauna as a result of their aggressive, invasive characteristics.

Ecological Impacts of Invasive Plants

- reduction of biodiversity
- loss of and encroachment upon endangered and threatened species and their habitat
- loss of habitat for native insects, birds, and other wildlife
- loss of food sources for wildlife
- changes to natural ecological processes
- alterations to the frequency and intensity of natural fires
- disruption of native plant-animal associations such as pollination, seed dispersal, and host-plant relationships

Invasive alien plants:

- compete with and replace rare and endangered species
- encroach upon limited habitat of rare and endangered species
- reduce or eliminate localized or specialized native plant communities
- disrupt insect-plant associations necessary for seed dispersal of native plants
- disrupt native plant-pollinator relationships
- reduce and eliminate host plants for native insects and other wildlife
- hybridize with native plant species, altering their genetic makeup
- replace nutritious native plant foods with lower quality sources
- kill trees and shrubs through girdling
- increase the incidence of plant disease and stress in forested areas
- prevent seedling establishment of native trees and shrubs
- reduce vigor of mature trees through shading
- reduce the amount of space, water, sunlight, and nutrients that would be available to native species
- increase erosion along stream banks, shorelines, and roadsides
- change characteristics of the soil structure and chemistry
- alter hydrological flows and conditions

Disturbance Effects

Invasive species are especially problematic in areas that have been disturbed by human activities like road building, residential development, forest clearing, logging operations, grazing, mining, ditching of marshes for mosquito control, mowing, erosion control and fire prevention and control activities. Natural disturbances such as fires, floods, tornadoes, landslides, and tree falls also provide avenues for invasive species to get started. The enormity of change wrought upon the American landscape over the past few hundred years has thrown things out of balance. Without exotic species, native species and ecosystems usually benefit from natural disturbances that provide opportunities for genetic mixing and nutrient recycling.

Native plants can sometimes display invasive growth tendencies in their native ranges, often as a response to natural or human-caused disturbances. For example, native grape vines in forests may grow vigorously in response to a tree fall or selective timber cut that opens the canopy and brings abundant sunlight into previously shaded areas. This "invasive" growth spurt is usually temporary though, and slows down again as trees and other plants fill in and the forest canopy is recovered.

The best way to reduce plant invasions is to focus on preventing non-native species introductions, managing existing infestations, minimizing disturbance to natural communities, and learning to work with nature, rather than against it.